SINUS OF FIRST BRANCHIAL CLEFT.

BY CARLETON P. FLINT, M.D.,

OF NEW YORK,

Assistant Attending Surgeon to the Roosevelt Hospital; Instructor in Surgery, College of Physicians and Surgeons, Columbia University.

THE following case is reported because of the rarity of the condition and because it illustrates that a lateral fistula in the neck of congenital origin is not always of second branchial cleft origin.

Henry Goldberg, 21, Russian Jew; stableman. Was admitted to the first surgical division of the Roosevelt Hospital February 20, 1907, on account of a swelling of the neck with a small discharging sinus. During early childhood he had developed tuberculous glands on both sides of neck. These were operated upon, the wounds subsequently discharging pus for months. Last operation 11 years ago. Except for children's diseases, history otherwise negative.

History of Complaint.—Ever since a small child he has had a swelling on right side of neck. This caused no symptoms until 4 years ago when it increased in size and was opened just above the clavicle. Since that time there has always been a slight amount of discharge. At times the opening would close, the swelling reappear and become tender. Finally the closed sinus would re-open and relief of symptoms would follow the discharge of contents. When admitted, his general condition was fair. Head, chest, abdomen and extremities negative. Temperature, 98; pulse, 92; respiration, 24. There were stellate puckered scars on both sides of neck, in submaxillary triangles and along anterior margin of sternomastoid muscle. A diffuse, pear-shaped swelling filled the posterior triangle of the right side of the neck up to level of the angle of the jaw. The stem of the pear was upward and was continuous with a dense induration extending behind the sternomastoid at the level of the jaw and from here upwards along the anterior margin of the sternomastoid. Just above the clavicle, the outer margin of the sternomastoid, was a small opening from which exuded, on pressure, a few drops of cloudy sticky fluid. The sinus was injected with bismuth in water and an X-ray plate taken. This plate (Fig. 1) showed a shadow extending upward, corresponding to the indurated area in shape and direction. Unfortunately the base of the skull is not on the plate.

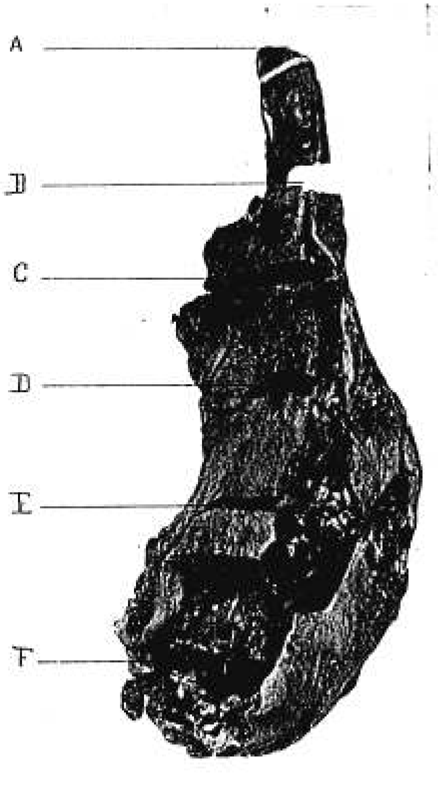
Operation.—Incision, the entire length of posterior margin of sternomastoid. The mass was found to have a well marked capsule which enabled easy separation from the sternomastoid, with which it was in intimate contact. At the level of the angle of the jaw the mass narrowed to a rounded strand about ½ inch in diameter. This passed upward and forward underneath the sternomastoid, and became smaller and firmer and about 1½ inch below the base of the skull it terminated in a cartilaginous column about ¼ inch in diameter. Throughout the entire length the mass could be shelled with comparative ease from the surrounding structures. The upper end was so firmly attached to the external auditory canal at the junction of the bony and cartilaginous portion, that in the process of removing the external canal was opened.

The relation to the surrounding structures of the neck was as follows: In the posterior triangle of the neck the mass lay beneath the deep cervical fascia with the exception of the sinus at the bottom. Anteriorly it was in contact with the posterior margin of the sternomastoid. Posteriorly and externally it was surrounded by the fat filling the posterior triangle and separating it from the trapezius and structures forming the floor of the triangle.

At the angle of the jaw where it passed forward and upward, underneath the sternomastoid muscle, it came in touch with the jugular vein. The upper portion passed beneath the occipital artery, left the jugular vein and was behind and to the outer side of the stylo-hyoid and stylo-pharyngeus. The last ½ inch was separated from the styloid process by a space just admitting the forefinger. The facial nerve did not come into the wound so that I am unable to state definitely its relation, but am of the opinion that the nerve crossed behind and to the outer side.

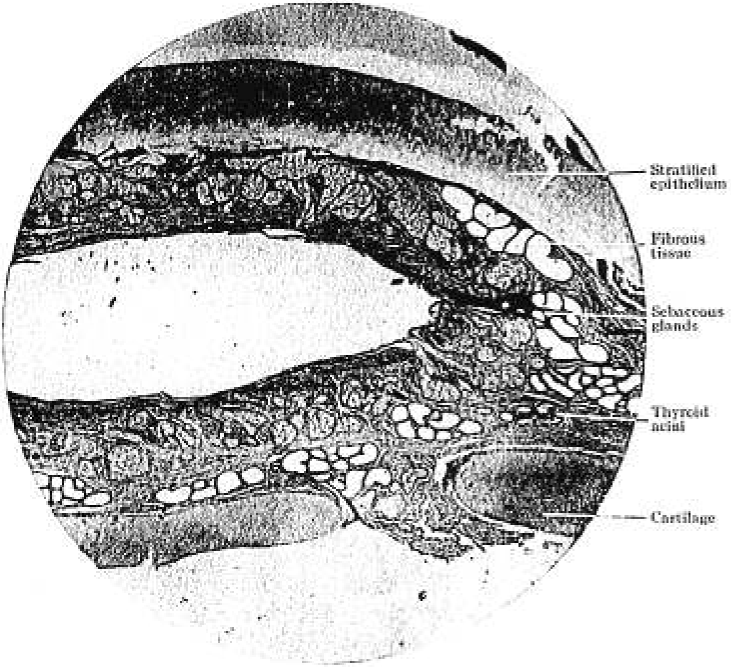
The wound healed by first intention, the patient leaving the hospital on the eighth day. The specimen was preserved in formalin and sections cut from the levels indicated in Fig. 2.

FIG. 1.



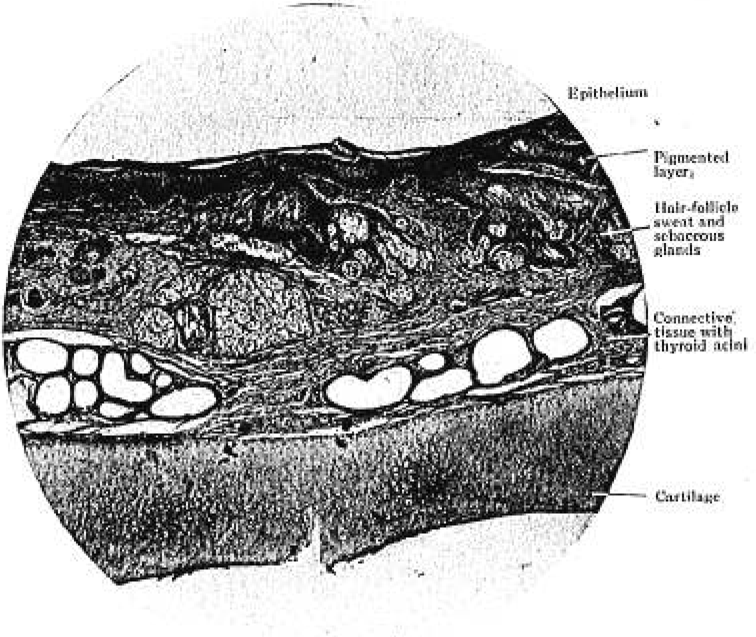
Photograph of specimen.

Fig. 2.



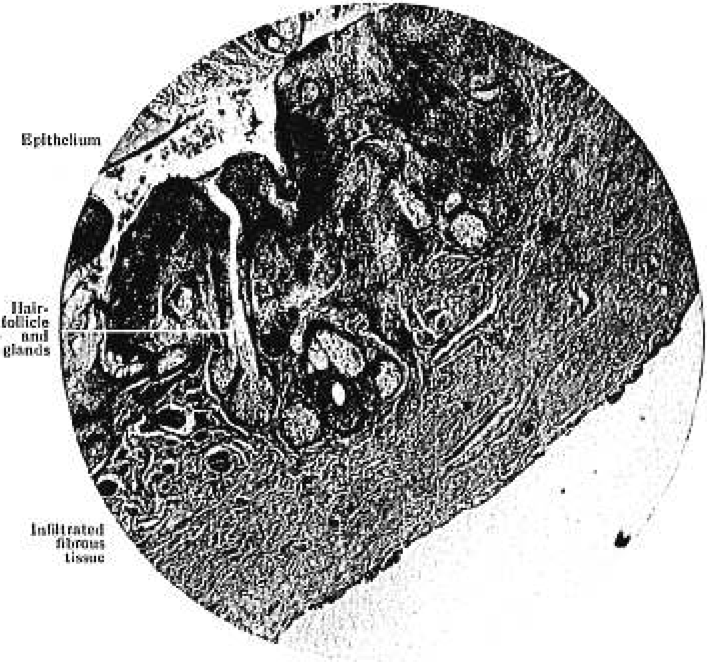
Section of entire cleft at level A. (See Fig. 1).

FIG. 3.


Epithelium
Pigmented layer
Hair-follicle sweat and sebaceous glands
Connective tissue with thyroid acini
Cartilage

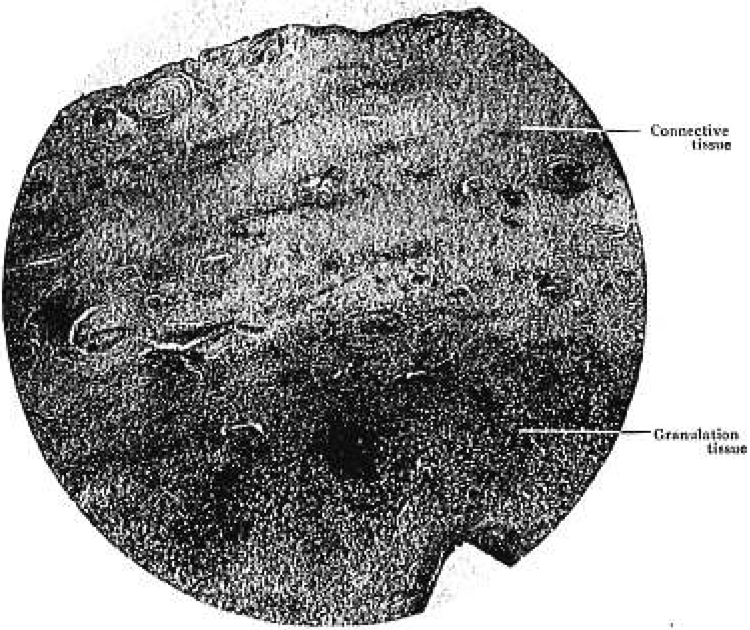
Enlargement of section shown in FIG. 2

FIG. 4.



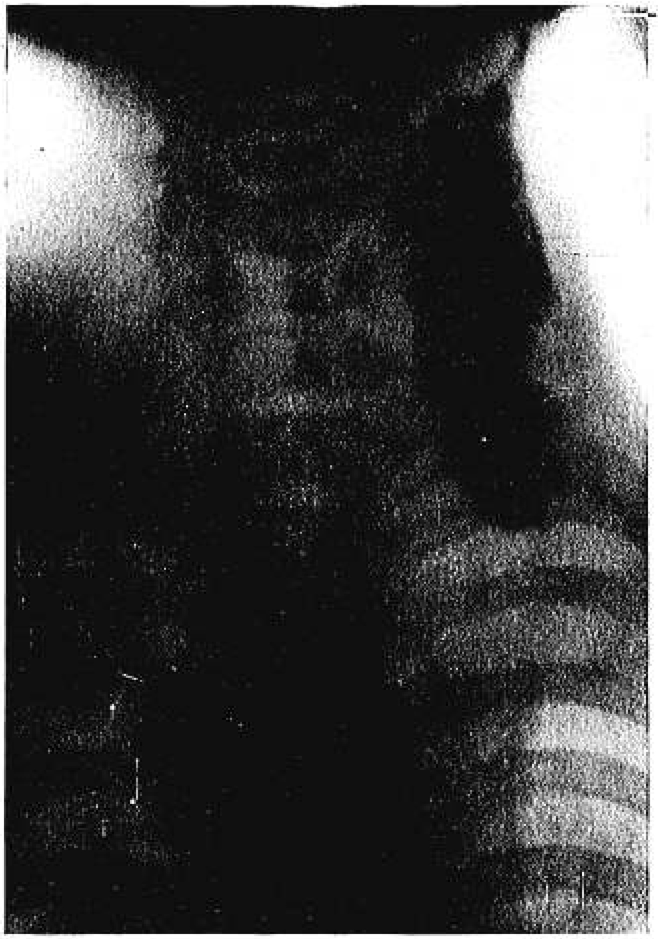
Enlargement of section taken through secondary cyst at level B. (See FIG. 1).

FIG. 5.



Taken from lower levels. C, D, E, Fig. 1 present same conditions.

FIG. 6



Radiograph showing cavity of sinus injected with bismuth subnitrate.

The pathological report follows:

The cyst is a pear-shaped structure having a length of 12 cm. and a transverse diameter at the widest part of the cyst body of 4 cm. (Fig. 1.) The neck is 3 cm. long and has a diameter of 1 cm. at its upper end and 1½ cm. where it begins to widen out into the cyst body. The lumen of the upper end of the neck measures ½ cm., and about the circumference of this part there is a smooth plate of cartilage on one side and irregular cartilage formation on the other. Two centimeters below the opening of the cyst and leading off from the canal of the neck there is developed in the wall a secondary cyst cavity 1 cm. long.

SECTION *A*.—Made transversely across the upper end of the neck, shows the following structure from within out:

First.—A layer of stratified squamous epithelium identical with that found on the general skin surface, having the typical horny layer and epithelial cells. Two or three layers of the superficial epithelium lying immediately under the horny layer contains a large amount of black granular pigment.

Second.—Beneath the epithelium there is a thin margin of very dense fibrous connective tissue through which are scattered young fibrous tissue cells.

Third.—A zone of very large sebaceous glands which are so numerous and closely packed together as to form a distinct layer. A few very wide ducts can be seen running from these glands to the surface of the lumen through the epithelium. The glands are held together by very firm fibrous tissue. A few hair follicles are scattered through this gland layer.

Fourth.—A layer composed of thyroid gland tissue. The acini are very large and lined with low cuboidal epithelium which throughout contains a large amount of light yellow granular pigment. A few of the acini contain colloid.

Fifth.—A zone of normal cartilage which is represented by a single plate on one side and by three smaller plates on the opposite side of the wall. The cartilaginous plates are held together by very dense fibrous tissue.

SECTION *B*.—Made 2½ cm. below section *A* includes a section through the secondary cyst. This pouch is lined by stratified squamous epithelium, having a horny layer, beneath which are a few sebaceous glands and hair follicles. Around the epithelium and glands is a layer of very dense fibrous connective tissue extensively infiltrated by inflammatory round cells and leucocytes. The main canal in this section shows a lining of thick granulation tissue composed of young fibrous tissue cells, leucocytes and young blood vessels. Outside of this inflammatory layer the wall is composed of dense fibrous tissue infiltrated with young fibrous tissue and migrating inflammatory cells.

Other Sections.—Taken at 4 cm. (C), 6 cm. (D), 8 cm. (E) and 12 cm. (F) from the neck of the cyst show a fibrous tissue wall lined by granulation tissue containing few squamous cells.

Points of Particular Interest.—First, lateral sinus of neck from first cleft; second, presence of thyroid tissue; third, relation to structures of second arch, the sinus being behind and underneath the upper portion of sternomastoid muscle.